

## **METHOD AND APPARATUS FOR IMPROVING PET DETECTORS**

### **ABSTRACT OF THE DISCLOSURE**

The present invention is directed to a system, method and software program  
5 product for implementing an efficient, low-radiation 3-D Complete-Body-Screening (3D-  
CBS) medical imaging device which combines the benefits of the functional imaging  
capability of PET with those of the anatomical imaging capability of CT. The present  
invention enables a different detector assembly, and together they enable execution of  
more complex algorithms measuring more accurately the information obtained from the  
10 collision of the photon with the detector. The present invention overcomes input and  
coincidence bottlenecks inherent in the prior art by implementing a massively parallel,  
layered architecture with processor separate stacks for handling each channel. The prior  
art coincidence bottleneck is overcome by limiting coincidence comparisons to those  
with a time stamp occurring within a predefined time window. The increased efficiency  
15 provides the bandwidth necessary for increasing the throughput even more by extending  
the FOV to over one meter in length and the execution of even more complex algorithms.